APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/702,505	10/31/2000	Donald M. Gray III	14531.74	9995

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EXAMINER
BRIER, JEFFERY A

ART UNIT	PAPER NUMBER
2672	

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/702,505	GRAY ET AL.
	Examiner	Art Unit
	Jeffery A Brier	2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 May 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21-27* is/are allowed.

6)☒ Claim(s) *1-7,9-20 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on

5/20/2004 has been entered.

Response to Amendment

2.   The amendment filed on 5/20/04 has been entered.

Response to Arguments

3.   Applicant's arguments filed 5/20/2004 have been fully considered but they are

not persuasive.

Applicants arguments concerning claim 10 at page 12 last two paragraphs have

been fully considered. Applicant argues "In particular, there is nothing in the Microsoft

Article that suggests data is read from one or more sources without first storing a

composite image of the data in an image buffer". On page 12 of the article in the first

column third paragraph input buffering of the video stream is described. In applicants

own figure 6 input buffering of the video stream is illustrated. Claim 10 was amended to

read reading image data directly from the one or more sources (the input buffer is the

source) according to context information and without first storing a composite image of

the data in an image buffer.   Firstly in there if only one source then a composite image

does not exist.   Secondly when there are two sources, the two sources are read and

blended according to the alpha values without first storing a composite image of the

data because the compositing is just beginning.

Applicants argument concerning claim 17 is not persuasive because the added

limitations do not distinguish from the combination of the Microsoft Article and the

Perlman patent because the newly added limitation "without blending the entire line with

either the entire previous line and the entire next line" is inherently met by the

combination because when the combination blends the previous span data, the span

data subject to flickering, and the next span data the entire line has not been blended.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-7, 9 and 28 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Independent claim 1 is indefinite because at

lines 6-7 the claim limitation "each line in each slice has the same at least one

associated source" does not follow the specification which at page 15 lines 4-9 states

each span has the same source whiled figure 4 clearly shows spans on line may have

different sources. It appears applicant means to claim "each span in each slice has the

same at least one associated source".

Claims 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claim 10 is indefinite because it claims compositing

an image from one or more sources. If there is only one source then compositing does

not occur because there is only one source image. At lines 2, 5, 6 and 9 "one or more"

should be "two or more".

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7.   Claims 10-14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by

the article titled The Microsoft Interactive TV System: An Experience Report by Michael

B. Jones, July, 1997, Technical Report MSR-TR-97-18.   A very pertinent portion of this

article is reproduced below.

3. Set-Top Box Hardware

The set-top box used in this trial was designed by Microsoft and manufactured by NEC. It uses a standard PC backplane, a 90 MHz Pentium processor (but clocked at 75 MHz), and a PCI bus. An NEC PCI ATM card is being used in the trial. Unlike a PC, the set-top box contains no disk, keyboard, mouse, or BIOS.

Custom video and audio hardware for the set-top box contains a MPEG-2 decoder, NTSC (the U.S. and Japanese analog television encoding standard) encoders & decoders, a tuner, and an audio mixer. A custom graphics chip called the Burma is capable of dynamically scaling and alpha blending (semi-transparently overlaying) multiple video and computer-generated graphics surfaces using different pixel representations into a single, flicker-filtered output image in real time. (Flicker filtering reduces the flicker associated with NTSC's interlaced display and slow refresh rate.)

The set-top box also has a bi-directional infrared port for communicating with the hand controller, a smart card interface, a serial port (used for debugging), a microphone input, auxiliary audio & video inputs, and separate audio and video outputs for TV and VCR.

The processor has an 8Ki/8Kd on-chip cache. There is no second level cache. The system was designed for 8MB of RAM, although it was typically used with 16MB and was eventually deployed with 24MB (more about this in section 12.4). The graphics system uses 2MB of RAMBUS memory, plus the MPEG-2 decoder contains 2MB of RAM. The system has 1/2 MB of boot ROM.

3.1 Burma Graphics Chip

The Burma graphics chip is central to Microsoft's interactive TV set-top box. In particular, it provides us with the capability of combining real-time video with dynamic computer-generated graphics under programmatic control.

The primary job of the Burma is to dynamically composite sets of video and computer-generated images into an output image. Images are represented as lists of spans, where a span is a horizontal line of pixels. Since spans can be of different lengths and have different origins, Burma images need not be rectangular.

Pixels can be represented in these data formats: 8-bit palletized color, 8-bit palletized color plus 8-bit alpha value, 16-bit Red-Green-Blue (RGB) (5R:6G:5B), 32-bit Luminance-Chrominance (YCrCb) pixel pairs (8-bit Y_0, 8-bit Y_1, 8-bit shared Cr, 8-bit shared Cb), 24-bit RGB, and 24-bit RGB plus 8-bit alpha. Those formats without per-pixel alpha values have per-span alpha values. Flicker filtering can be controlled on a per-span basis.

Major functional blocks within the Burma include two video capture engines, a color space converter, a static composition engine (a blitter) with source transparent color checking, a dynamic composition engine (performs alpha blending), a flicker filter, video output, a PCI interface with pre-fetcher and a RAMBUS interface.

The Burma was designed to be clocked at 62.5MHz and is actually clocked at 50MHz. The 8-bit RAMBUS channel was designed to be clocked at 250MHz, and was actually clocked at 200MHz (4 × 50 MHz). RAMBUS transfers occur on both up and down transitions, giving an ultimate achievable speed of 500Mbytes/second or a BLT rate of 250Mbytes/second. In practice, about 50% of that is achievable with the Burma.

The Burma chip is implemented as a custom ASIC fabricated using a .35 micron process. The chip size is 8.68 × 8.68 mm. It contains 252K total gates, or roughly 1 million transistors. The logic is 140K gates, plus 56Kbits of RAM.

A detailed analysis of the claims follows.

Claim 10:

This article teaches in a system including a display device for displaying; an image,

each image being generated from one or more sources, each source having data, a

method for compositing the image, the method comprising the acts of:

generating a control structure having context information (*the lists are*

a control structure having context information) describing the image,

wherein the context information identifies the one or more sources (*inherently the*

list identifies the source);

reading image data directly from the one or more sources according to the context information and without first storing a composite image of the data in an image buffer (*section 2.1 last paragraph, section 3.0 last paragraph, section 4 paragraph 8, section 6.3 second paragraph, section 12.4 describes memory used in the MITV which uses buffers to buffer the sources but does not use a double image buffer. Firstly in there if only one source then a composite image does not exist. Secondly when there are two sources, the two sources are read and blended according to the alpha values without first storing a composite image of the data because the compositing is just beginning.*); and

displaying the read data on the display device as the data is read from the one or more sources (*as the data is read the Burma chip processes the video and sends it to video memory for display on the TV*).

Claim 11:

Section 3.1 describes the list defining an image as having spans that can be of different lengths then this article teaches at last two images with each image having a slice having several lines with each line of the image being a span on the TV line and each span has a source.

Claim 12:

The lists inherently have the broadly claimed headers since an identifier for each

image, each list, each line, and their source is necessary.

Claim 13:

This article describes at page 12 first column lines 5-10 loading each associated source

in memory.

Claim 14:

Sections 3 and 3.1 describe blending which requires two or more sources of pixel data.

If there were only a first source then there would be no other pixels to blend with the

pixel's from the first source of pixels. In section 3.1 third paragraph 3 types of RGB is

described, these three RGB sources are a first color space, and in the same paragraph

is described one YcrCb and in section 3 second paragraph MPEG and NTSC are

described, these three sources are second color space.

Claim 16:

The article at page 3 second column line 8 describes flickering as controlled on a span

basis, thus, vertically adjacent spans are filtered to reduce flicker.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over

the article titled The Microsoft Interactive TV System: An Experience Report by Michael

B. Jones, July, 1997, Technical Report MSR-TR-97-18 and in view of Perlman et al.,

U.S. Patent No. 5,745,909, already of record.

Claim 17:

This article teaches in a system including a display device for displaying an image, a

method for reducing the flicker of a portion of the image (*see section 3.1*

paragraph 3 line 9), the method comprising the acts of:

reading data from a source, wherein the data is the portion of the image that is subject

to flickering, and wherein the data defines a single span of a plurality of spans that are

included in a line (*see section 3 paragraph 2, see section 3.1*

paragraph 3 lines 9 and 10);

reading previous data from the source, wherein the previous data

corresponds to a previous span in a previous line, wherein the previous span is

vertically adjacent to the span (*to reduce flicker in interlaced TV*

displays at least one of the previous and next lines are filtered with the current line) and comprises only one of a plurality of spans in the previous line (*section 3.1 paragraph 3 line 9 which describes flicker filtering on a span basis rather than flicker filtering all of the lines on the TV*);

reading next data from the source, wherein the next data corresponds to a next span in a next line and wherein the next span is vertically adjacent to the span (*to reduce flicker in interlaced TV displays at least one of the previous and next lines are filtered with the current line*) and comprises only one of a plurality of spans in the next line (*section 3.1 paragraph 3 line 9 which describes flicker filtering on a span basis rather than flicker filtering all of the lines on the TV*);   and

blending the previous span data, the span data subject to flickering, and the next span data, without blending the entire line with either the, entire previous line and the entire next line, (*section 3.1 paragraph 3 line 9 describes flicker filtering on a span basis rather than flicker filtering all of the lines on the TV. When the combination of the Microsoft article and Perlman blends the previous span data, the span data subject to flickering, and the next span data the entire line has not been blended because by definition of span given in section 3.1 a span is not an entire line especially when a non rectangular image is being blended.*) and such that the flicker that would

otherwise exist at the portion of the image corresponding to the span is reduced

(*section 3 paragraph 2 lines 8-11*).

The article's description of the Burma chip did not indicate which type of flicker

filter was used.

Perlman teaches a flicker filter that filters the previous and next lines with the

current line.

It would have been obvious to one of ordinary skill in the at to use the flicker filter

of Perlman in the Burma chip so a good flicker free image will be displayed.

Claim 18:

Inherent to the article's system. Each line is a data stream. Each line that enter

Perlman's filter is a data stream.

Claim 19:

Section 3.1 describes various formats for the pixels in the third paragraph. In the fourth

paragraph a color space converter is described.

The article does not appear to describe in what order the input pixels are blended and

color space converted.

It would have been obvious to one of ordinary skill in the art to blend for example two

RGB format pixels prior to color space conversion to YcrCb color space because this

will save processing time due to only having to perform color space conversion once

after blending instead of color space conversion twice, once for each pixel stream, and

then blending, thus, blending first is two processes and blending after is three

processes the Burma chip would have to perform.

Claim 20:

The TV is interlaced and displays images using interlaced fields, the span included in

the line is displayed on the TV.

Allowable Subject Matter

10.   Claims 1-7, 9 and 28 would be allowable if rewritten or amended to overcome the

rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. The

prior art of record fails to teach or suggest for each portion that is opaque, reading only

from the sources that correspond to the opaque portion and that would be visible within

the opaque portion during display of the image, and without reading data from any

sources that would otherwise be obscured in the opaque region during display of the

image in a system that divides the image into slices, each slice including at least one

line, dividing each line in each slice into at least one span where each span in each

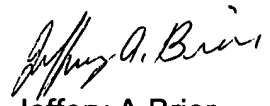slice has the same at least one associated source.

Claims 21-27 are allowed. Claim 15 would be allowable if rewritten to overcome

the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action

and to include all of the limitations of the base claim and any intervening claims. The

prior art of record fails to teach or suggest directing the data streams having the same

color space to one or more blending units and blending, by each blending unit, the data

streams having the color space that is the same as the associated color space of the

blending unit to produce outputs, converting the outputs to a single color space, and

blending the outputs to produce an image data stream.

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jeffery A Brier whose telephone number is 703-305-

4723. The examiner can normally be reached on M-F from 6:30 to 3:00. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael

Razavi, can be reached at (703) 305-4713). The fax phone number for the organization

where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Jeffery A Brier
Primary Examiner
Art Unit 2672